

ESTABLISHED 1879 • INCORPORATED 1884

C A T A L O G 1 1 9



**HARGRAVE**

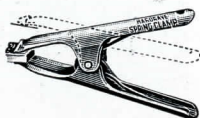
*Tested Tools*

**THE CINCINNATI  
TOOL COMPANY**

**Cincinnati 12, Ohio**

## IMPROVED SPRING CLAMP

Can be applied or removed instantly. Holds firmly without marring the work. All parts accurately fitted, insuring long and satisfactory service.



Stock	Opening	Length	Quantity per Box	Wt., lbs. per Box
No. 1	1 in.	4 in.	12	1½
No. 2	2 in.	6 in.	12	4¾
No. 3	3 in.	9 in.	6	4½

Can be furnished promptly with Rubber Tips when required; also available with special clamping surfaces. Write for information.

## JUNIOR CLAMPS



### Nos. 566-568

Strong Malleable Frames — Steel Screws.

Used extensively in Aircraft and many other industrial plants. Flat Wing handle and Riveted Button Tip. Natural Finish.

Stock	Opening	Depth	Quantity per Box	Wt., lbs. per Box
No. 566	1¼ in.	1¼ in.	72	14¾
No. 568	2½ in.	2½ in.	24	17

### Nos. 551-552

Strong Malleable Alloy Frames  
Steel Screws.

Designed especially for model and pattern making, aircraft construction and other medium clamping operations. Strong malleable alloy frame, specially heat-treated, is rust resistant. Steel Screw, Pin Handle, Oscillating (ball and socket) Tip. Natural finish.



Stock	Opening	Depth	Quantity per Box	Wt., lbs. per Box
No. 551	4 in.	2⅞ in.	6	8½
No. 552	6 in.	3¼ in.	6	14¼

(Also Deep Reach Junior Clamps No. 555, 1½" x 3½" and No. 556, 2½" x 4½").

Depth is from center of screw to frame.

## SUPER-JUNIOR CLAMPS

### FORGED STEEL, HEAT-TREATED FRAMES



## SEVEN SIZES — 1" TO 3" OPENINGS

DEPTHS 1 in. to 2½ in.

Suitable for Jig and Pattern Work, Welding, Gluing and Aircraft construction. Will last many times longer than other cast clamps.

Stock	Opening	Depth	Quantity per Box	Wt., lbs per Box
No. 50	1 in.	1 in.	12	1½
No. 51	1 in.	1½ in.	12	2⅛
No. 52	1¼ in.	1¼ in.	12	2⅜
No. 53	1½ in.	1½ in.	12	3⅜
No. 54	2 in.	1¼ in.	6	2⅛
No. 55	3 in.	1⅜ in.	6	3⅜
No. 56	2½ in.	2½ in.	6	4¼

Flat wing handle furnished when required.

## No. 540P STANDARD CARRIAGE CLAMP

(Reg. U. S. Pat. Off.)

EACH CLAMP IS "POWER TESTED"



**FRAME**—Special analysis of metal, shaped to give greatest strength for the weight.

**SCREW**—Steel, specially treated to prevent bending, breaking or battering of threads. "Acme" thread insures long life. Furnished with steel oscillating (ball and socket) tip.

**No. 540W with Wing Handle** forged integral with screw available if desired.

Opening	Depth	Quantity Per Box	Lbs. Box	Opening	Depth	Quantity Per Pkg.	Lbs. Box
2½ in.	1¾ in.	6	5½	8 in.	3¼ in.	*1	4
3 in.	1⅞ in.	6	6¼	10 in.	3⅝ in.	*1	7¼
4 in.	2⅞ in.	6	11	12 in.	3⅝ in.	*1	8½
5 in.	2½ in.	6	14	14 in.	3¾ in.	*1	9¼
6 in.	2¾ in.	6	17				

\*Packed in bulk.

See Clamp Test on Back Cover

## No. 44P — FORGED STEEL SUPERCLAMP

### "POWER TESTED"

**No. 44P — Regular Duty — Sliding Pin (Vise Type) Handle.**

Frame made by patented process from extremely stiff steel and heat-treated. Steel Screws are large in diameter, full length in all sizes and specially treated to prevent bending and battering of threads.



(No. 44W with Wing Handle forged integral with screw available if desired.)

Opening	Depth	Screw Diameter	Test Load Pounds	Quantity per Box	Wt., lbs., Each
1 in.	1 in.	$\frac{3}{8}$ in.	1,800	6	1½
1½ in.	1¾ in.	$\frac{3}{8}$ in.	2,000	6	3
2 in.	1¾ in.	$\frac{1}{2}$ in.	2,700	6	6
3 in.	2¼ in.	$\frac{1}{2}$ in.	3,000	6	9
4 in.	2½ in.	$\frac{5}{8}$ in.	3,700	6	13½
6 in.	3½ in.	$\frac{5}{8}$ in.	4,500	6	21
8 in.	3¾ in.	$\frac{3}{4}$ in.	5,200	Bulk	5¾
10 in.	4 in.	$\frac{7}{8}$ in.	6,000	Bulk	7⅞
12 in.	4 in.	$\frac{7}{8}$ in.	8,000	Bulk	9½

## No. 400 — DEEP GENERAL DUTY CLAMP

### No. 400S-PLATED (Spatter Resisting)

### DROP FORGED—"POWER TESTED"



**FRAME** — Steel, drop forged and heat-treated. It is deep and very strong. Metal is distributed for maximum strength without excessive weight.

**SCREW** — Steel, full length to and including 6 in., specially treated to prevent bending and battering of threads.

Furnished with steel oscillating (ball and socket) tip and sliding pin (vise type) handle.

Maximum Opening	Minimum Opening	Depth	Screw Diameter	Test Load Pounds	Wt. lbs. Each
2 in.	0 in.	2 in.	$\frac{1}{2}$ in.	3,300	1
3 in.	0 in.	2¾ in.	$\frac{1}{2}$ in.	3,500	1½
4 in.	0 in.	2¾ in.	$\frac{5}{8}$ in.	4,100	2⅞
6 in.	0 in.	3½ in.	$\frac{5}{8}$ in.	5,400	4⅞
8 in.	2 in.	4½ in.	$\frac{3}{4}$ in.	5,900	6
10 in.	3 in.	5¾ in.	$\frac{3}{4}$ in.	6,200	8¾
12 in.	4 in.	5¾ in.	$\frac{7}{8}$ in.	9,300	11

Depth is from center of screw to frame.

## No. 42 — SUPERCLAMP MEDIUM DUTY

"POWER TESTED"

FRAME is forged from an extremely stiff steel and heat-treated.

SCREW is hardened steel with ANC thread and Sliding Pin (Vise Type) Handle.



Maximum Opening	Minimum Opening	Depth	Screw Diameter	Test Load, Pounds	Wt., lbs., Each
4 in.	0 in.	2½ in.	¾ in.	10,000	4½
6 in.	2⅝ in.	2¾ in.	¾ in.	11,250	5⅝
8 in.	4⅞ in.	2¾ in.	¾ in.	12,500	6⅞
10 in.	6⅞ in.	3 in.	¾ in.	13,750	8
12 in.	8⅞ in.	3 in.	7/8 in.	15,000	8⅞
15 in.	10 in.	3¼ in.	7/8 in.	16,250	12⅞
18 in.	13 in.	3¼ in.	7/8 in.	17,500	13⅞

## No. 40 — HEAVY DUTY

### No. 40S — PLATED (Spatter Resisting)

"POWER TESTED"

FRAME is DROP FORGED from an extremely stiff steel and heat-treated.

SCREW is hardened steel with ANC thread and Square Head. Full length screw furnished when desired.



Maximum Opening	Minimum Opening	Depth	Screw Diameter	Test Load, Pounds	Wt., lbs., Each
¾ in.	0 in.	1⅞ in.	3/8 in.	2,500	¼
1¼ in.	0 in.	1⅞ in.	3/8 in.	5,600	¾
1¾ in.	¾ in.	1⅞ in.	1/2 in.	8,750	1½
2¼ in.	7/8 in.	1⅞ in.	5/8 in.	12,500	3⅝
3¼ in.	1⅜ in.	2½ in.	7/8 in.	16,250	6⅜
4½ in.	2 in.	2¾ in.	7/8 in.	20,000	10½
5½ in.	2½ in.	3¼ in.	7/8 in.	23,800	12⅞
6½ in.	3⅞ in.	3¼ in.	1 in.	27,500	16⅞
8½ in.	4¼ in.	3⅝ in.	1⅞ in.	31,250	25¾
10½ in.	6⅜ in.	4 in.	1⅞ in.	35,000	31¾
12½ in.	7⅝ in.	4½ in.	1¼ in.	40,000	41½

Depth is from center of screw to frame.

**No. 573 — DEEP CLAMP****"POWER TESTED"**

A medium weight clamp, similar to the Standard Clamp, but with a deeper reach. Strong, malleable alloy frame, specially heat-treated, with oscillating (ball and socket) tip.

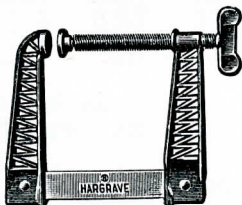
**DUCTILE IRON FRAME**

Opening, Inches	Depth, Inches	Screw Diam.	Wt., lbs., Each
3½	4½	5/8"	2¼
4½	4½	5/8"	2¾
6½	4½	5/8"	3¾

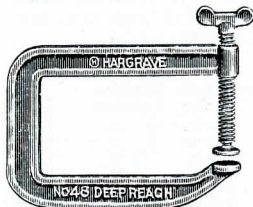
**No. 574 — RIGID DEEP CLAMP****"POWER TESTED"**

Especially designed for heavy duty work. Malleable uprights riveted to high carbon steel bar, ½-in. x 2-in. Steel screw 7/8-in. diameter specially treated. Oscillating (ball and socket tip). All 9-in. deep.

Opening, Inches		Depth, Inches	Screw Diam.	Wt., lbs., Each
6	x	9	7/8"	12½
8	x	9	7/8"	12½
12	x	9	7/8"	14½
16	x	9	7/8"	16½

**No. 48 — DEEP REACH SUPER CLAMP****"POWER TESTED"**

Forged Steel Frame of No. 48 makes it an excellent clamp for deep reach, medium to heavy service, clamping operations. Screw is steel, heat-treated and full length in all sizes. Tip is steel—put on to stay.

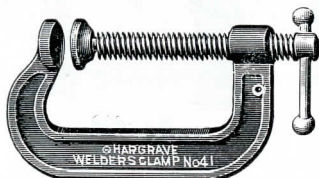


Opening	Depth	Size Steel	Screw Diameter	Test Load, Pounds	Wt., lbs. Each
6 in.	x 8 in.	½ x 2 in.	5/8 in.	2,200	8
8 in.	x 12 in.	½ x 2 in.	¾ in.	1,800	11½
8 in.	x 16 in.	5/8 x 2 in.	¾ in.	1,600	18½
12 in.	x 16 in.	5/8 x 2 in.	7/8 in.	1,500	20

## HARGRAVE WELDERS' CLAMPS with Patented Anti-Spatter Screws

No. 41 Regular Service and No. 43 Heavy Service Welders' Clamps have patented solid bronze alloy screws that resist spatter. The few particles of spatter that may stick to this type of screw are easily cleaned off. Do not confuse HARGRAVE Welders' Clamps with ordinary clamps having plated-type screws. FRAMES ARE DRILLED FOR GROUND CONNECTION.

### No. 41 — FORGED STEEL REGULAR SERVICE



FRAME is forged steel, heat-treated (not malleable iron or cast steel). Note test loads listed below.

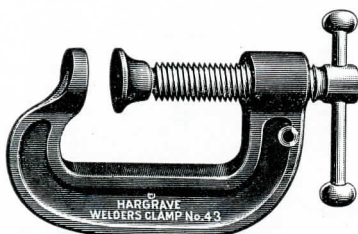
SCREW is patented solid alloy—anti-spatter.

TIP is ball and socket type—lines up work that is not square.

"POWER TESTED"

Opening	Depth	Screw Diameter	Test Load, Pounds	Wt., lbs., Each
2 in.	1 <sup>3</sup> / <sub>4</sub> in.	<sup>1</sup> / <sub>2</sub> in.	2,700	<sup>7</sup> / <sub>8</sub>
3 in.	2 <sup>1</sup> / <sub>4</sub> in.	<sup>5</sup> / <sub>8</sub> in.	3,000	1 <sup>3</sup> / <sub>4</sub>
4 in.	2 <sup>1</sup> / <sub>2</sub> in.	<sup>5</sup> / <sub>8</sub> in.	3,700	2 <sup>1</sup> / <sub>4</sub>
6 in.	2 <sup>3</sup> / <sub>4</sub> in.	<sup>3</sup> / <sub>4</sub> in.	4,500	3 <sup>3</sup> / <sub>4</sub>

### No. 43 — FORGED STEEL HEAVY SERVICE



FRAME is forged steel, heat-treated (not malleable iron or cast steel). Note test loads listed below.

SCREW is patented solid alloy—anti-spatter.

TIP is ball and socket type—lines up work that is not square.

"POWER TESTED"

Maximum Opening	Minimum Opening	Depth	Screw Diameter	Test Load, Pounds	Wt., lbs., Each
4 in.	0 in.	2 <sup>1</sup> / <sub>2</sub> in.	<sup>7</sup> / <sub>8</sub> in.	10,000	4 <sup>3</sup> / <sub>4</sub>
6 in.	0 in.	2 <sup>3</sup> / <sub>4</sub> in.	1 in.	11,250	6 <sup>1</sup> / <sub>4</sub>
8 in.	2 in.	2 <sup>3</sup> / <sub>4</sub> in.	1 in.	12,500	7 <sup>3</sup> / <sub>8</sub>
10 in.	3 in.	3 in.	1 <sup>1</sup> / <sub>8</sub> in.	13,750	10 <sup>1</sup> / <sub>8</sub>
12 in.	5 in.	3 in.	1 <sup>1</sup> / <sub>8</sub> in.	15,000	11

Depth is from center of screw to frame.



## QUICK CLAMPS (Patented)

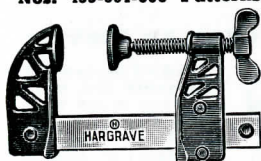
Especially useful in pattern making, boat and ship building, automobile body, airplane and general woodworking.

The patented Clutch will not slip or bind. Always easily released by hand. Bar and screw are steel, other parts are malleable.

("DEPTH" IS DISTANCE FROM CENTER OF SCREW TO BAR)

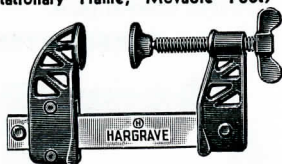
Nos. 498-500-514 Patterns (Movable Frame, Stationary Foot)

Nos. 499-501-503 Patterns (Stationary Frame, Movable Foot)



**No. 498**

Bar, 1 x $\frac{5}{16}$ in.	Depth, 2 in.
Opening, Inches	Wt., lbs., Each
4	2 $\frac{1}{4}$
6	2 $\frac{3}{8}$
8	2 $\frac{5}{8}$
12	3
18	3 $\frac{1}{2}$
24	4 $\frac{1}{8}$
30	4 $\frac{5}{8}$



**No. 499**

Bar, 1 x $\frac{5}{16}$ in.	Depth, 2 in.
Opening, Inches	Wt., lbs., Each
4	2 $\frac{1}{4}$
6	2 $\frac{3}{8}$
8	2 $\frac{5}{8}$
12	2 $\frac{7}{8}$
18	3 $\frac{1}{2}$
24	4
30	4 $\frac{1}{2}$

**No. 500**

Bar, 1 $\frac{1}{2}$ x $\frac{1}{4}$ in.	Depth, 2 $\frac{1}{2}$ in.
Opening, Inches	Wt., lbs., Each
6	3 $\frac{5}{8}$
8	3 $\frac{7}{8}$
12	4 $\frac{3}{8}$
18	5
24	5 $\frac{3}{4}$
30	6 $\frac{3}{8}$
36	7 $\frac{1}{8}$

**No. 501**

Bar, 1 $\frac{1}{2}$ x $\frac{1}{4}$ in.	Depth, 2 $\frac{1}{2}$ in.
Opening, Inches	Wt., lbs., Each
6	3 $\frac{3}{4}$
8	4
12	4 $\frac{3}{8}$
18	5
24	5 $\frac{5}{8}$

**No. 514**

Specially Designed for  
Heavy Work.

Bar, 1 $\frac{3}{4}$ x $\frac{3}{8}$ in.	Depth, 3 in.
Opening, Inches	Wt., lbs., Each
6	6 $\frac{5}{8}$
8	6 $\frac{3}{4}$
12	7 $\frac{5}{8}$
18	8 $\frac{7}{8}$
24	9 $\frac{3}{4}$
36	12 $\frac{1}{4}$
48	14 $\frac{1}{2}$

**No. 503**

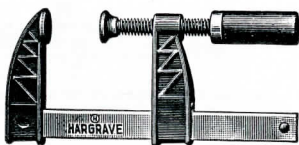
Bar, 1 $\frac{3}{4}$ x $\frac{3}{8}$ in.	Depth, 4 $\frac{1}{2}$ in.
Opening, Inches	Wt., lbs., Each
6	6 $\frac{1}{4}$
8	6 $\frac{1}{2}$
12	7 $\frac{3}{8}$
18	8 $\frac{1}{2}$
24	9 $\frac{1}{2}$



## QUICK CLAMPS (Patented)

Hargrave Quick Clamps can be instantly applied or removed from the work, take up less room and save a great amount of time over ordinary "C" clamps.

(Movable Frame, Stationary Foot, Wood Handle.)



### No. 496 (Light)

Bar, $\frac{1}{4}$ x $\frac{3}{4}$ in.	Depth, $2\frac{1}{2}$ in.
Opening, Inches	Wt., lbs., Each
4	1
6	$1\frac{1}{8}$
8	$1\frac{1}{8}$
12	$1\frac{1}{2}$
18	$1\frac{5}{8}$
24	$2\frac{1}{8}$

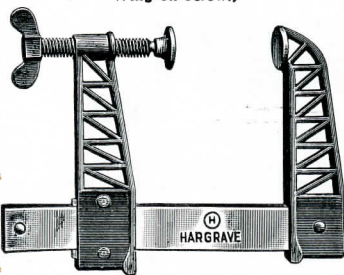
### No. 506 (Medium)

Bar, 1 x $\frac{5}{16}$ in.	Depth, $3\frac{1}{2}$ in.
Opening, Inches	Wt., lbs., Each
6	$2\frac{7}{8}$
8	3
12	$3\frac{3}{8}$
18	$3\frac{7}{8}$
24	$4\frac{3}{8}$
30	$4\frac{7}{8}$

### Nos. 502-508-510-512

#### Patterns

(Movable Frame, Stationary Foot Wing on Screw.)



### No. 512

Bar, $1\frac{1}{2}$ x $\frac{1}{4}$ in.	Depth, 4 in.
Opening, Inches	Wt., lbs., Each
6	4
8	$4\frac{1}{4}$
12	$4\frac{5}{8}$
18	$5\frac{1}{4}$
24	6

### No. 508

Bar, $1\frac{3}{4}$ x $\frac{3}{8}$ in.	Depth, 6 in.
Opening, Inches	Wt., lbs., Each
6	$7\frac{1}{2}$
8	8
12	$8\frac{3}{4}$
18	10
24	$11\frac{1}{8}$
36	$12\frac{1}{4}$

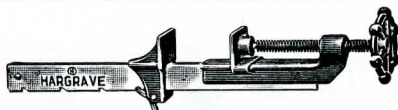
### No. 502

Bar, $1\frac{3}{4}$ x $\frac{3}{8}$ in.	Depth, $4\frac{1}{2}$ in.
Opening, Inches	Wt., lbs., Each
6	$5\frac{7}{8}$
8	$6\frac{1}{4}$
12	7
18	$8\frac{1}{8}$
24	$9\frac{1}{4}$
36	$11\frac{1}{2}$
48	$13\frac{3}{4}$

### No. 510

Bar, 2 x $\frac{1}{2}$ in.	Depth, 9 in.
Opening, Inches	Wt., lbs., Each
6	15
8	$15\frac{1}{2}$
12	$16\frac{3}{4}$
18	$18\frac{1}{2}$
24	$20\frac{1}{4}$

## No. 458 — LIGHT DUTY BAR CLAMP



Our No. 458 is intended for narrow gluing and clamping where speed and rapidity of handling are more necessary than power. High Carbon Manganese Steel Bar. Screw— $\frac{1}{2}$ " dia., specially treated, with "Acme" thread.

Opening, Feet	Clamping Surfaces	Bar Dimension	Wt., lbs., Each
2	1 $\frac{1}{4}$ in. Deep x 1 $\frac{3}{8}$ in. Wide	$\frac{3}{16}$ in. x 1 $\frac{1}{8}$ in.	3 $\frac{3}{4}$
3	1 $\frac{1}{4}$ in. Deep x 1 $\frac{3}{8}$ in. Wide	$\frac{3}{16}$ in. x 1 $\frac{1}{8}$ in.	4

## ALL METAL "T" HANDLE

This all-metal "T" crank handle can be supplied on all clamps having either  $\frac{5}{8}$  in. or  $\frac{1}{2}$  in. diameter screws.



## No. 640 — REGULAR DUTY "I" BAR CLAMP (Patented)



### NO RUINED JOINTS FROM SLIPPING

Designed and constructed for the hard every-day grind of production. Its exclusive features of superiority make it the choice of the world's largest users.

**BAR**—Shaped to stand the greatest strain for the weight. Wide smooth flange will not mar the work. Size 1  $\frac{1}{2}$  x  $\frac{5}{8}$  x  $\frac{1}{8}$  in.

**NOTCHES**—formed in web, leaving the bar full strength as no metal is removed. Spaced  $\frac{1}{2}$  in. apart.

**SLIDE**—Malleable. Cannot slip or bind. Always easily released. Heavy-tempered steel pawl engages the notches making a positive stop and insuring years of service without repairs. Clamping surface, 1  $\frac{1}{4}$ " deep x 1  $\frac{3}{8}$ " wide.

**TIP**—Malleable with case-hardened thrust bearing for end of screw, practically eliminating wear.

**SCREW**—Steel,  $\frac{5}{8}$ -inch diameter specially treated with deep-cut "ACME" thread and long bearing, insuring long life. Steel crank handle with improved wood grip. (Metal "T" handle available if desired.)

Opening, feet.....	2	2 $\frac{1}{2}$	3	4	5	6	7
Weight, lbs., each.....	7	7 $\frac{3}{4}$	8 $\frac{1}{4}$	9 $\frac{1}{2}$	10 $\frac{3}{4}$	12	13 $\frac{1}{4}$

## No. 440 (Medium Duty) — No. 450 (Heavy Duty) PERFECTION BAR CLAMPS

(Trade Name Registered)



This Clamp is made in two patterns—medium and heavy. The medium pattern has clamping surfaces 2 in. deep,  $1\frac{7}{8}$  in. wide,  $\frac{5}{8}$  in. screw. The clamping surfaces of the heavy pattern are  $2\frac{1}{4} \times 2\frac{1}{4}$  in.,  $\frac{3}{4}$  in. screw.

The bar is high carbon manganese spring steel giving great strength. Crank, frame, tip and slide are of the best grade of malleable iron. Pawl for slide is tempered steel.

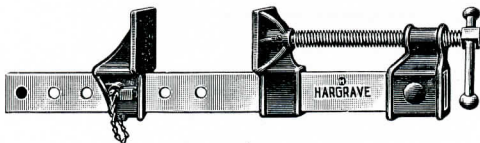
**No. 440—Medium Duty—With Bar  $1\frac{1}{2} \times \frac{1}{4}$  in.**

Openings, ft. ....	2	$2\frac{1}{2}$	3	4	5	6
Wt., lbs., Ea. ....	$6\frac{1}{4}$	$6\frac{3}{4}$	$7\frac{1}{4}$	$8\frac{3}{4}$	10	$11\frac{1}{4}$

**No. 450—Heavy Duty—With Bar  $1\frac{3}{4} \times \frac{3}{8}$  in.**

Openings, ft. ....	3	4	5	6	7	8	10
Wt., lbs., Ea. ....	$13\frac{1}{2}$	$15\frac{3}{4}$	18	20	$22\frac{1}{4}$	$24\frac{1}{2}$	$28\frac{1}{2}$

## No. 750 — EXTRA HEAVY DUTY BAR CLAMP



Note WEIGHT EACH before ordering.

Designed specially for the heaviest type of work such as truck and trailer body work, tank construction, and heavy steel fabrication.

$\frac{5}{8} \times 2\frac{1}{2}$  in. high carbon steel bar. Hole spaced  $2\frac{1}{2}$ " on centers.

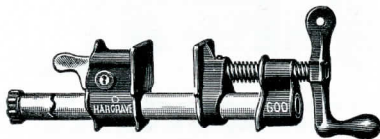
Frame, tip, and slide are heavy, reinforced malleable. Clamping surface 4" deep, 3" wide, 1" diameter screw, "ACME" thread, heat-treated.

Opening, ft. ....	3	4	5	6	7	8	10	12
Weight, lbs., each. ....	$33\frac{3}{4}$	$38\frac{1}{2}$	$43\frac{3}{4}$	$48\frac{1}{4}$	$53\frac{1}{4}$	$57\frac{1}{2}$	69	$76\frac{3}{4}$

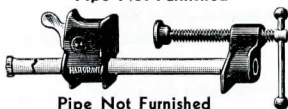
**CAUTION:** Check specifications carefully before ordering as this is the strongest and heaviest bar clamp on the market.

**CLAMP FIXTURES**

(MALLEABLE)

**For  $\frac{1}{2}$ " and  $\frac{3}{4}$ " Pipe**No. 600 Fits  
 $\frac{3}{4}$ " Pipe\*No. 620 Fits  
 $\frac{1}{2}$ " Pipe

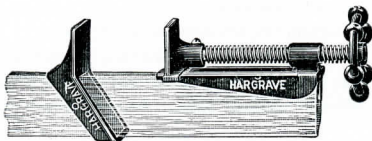
Pipe Not Furnished



Pipe Not Furnished

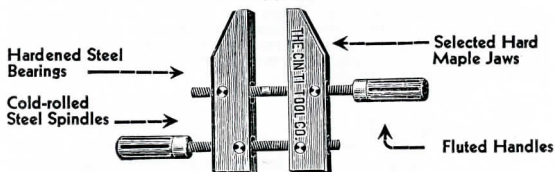
No. 621 Fits  
 $\frac{1}{2}$ " PipeNo. 600—Clamping Surface  $1\frac{3}{4}$ " x  $1\frac{3}{4}$ ", Weight  $2\frac{1}{2}$  lbs.No. 620—Clamping Surface  $1\frac{1}{2}$ " x  $1\frac{1}{2}$ ", Weight  $1\frac{3}{8}$  lbs. (\*Sliding Pin Handle).No. 621—Clamping Surface  $1\frac{1}{2}$ " x  $\frac{15}{16}$ ", Weight  $1\frac{3}{8}$  lbs. (Sliding Pin Handle, oscillating ball & socket tip).**CLAMP FIXTURES**

(MALLEABLE)

**For  $1\frac{1}{8}$ " x  $2\frac{1}{4}$ " Wood Bar**

Wood Bar Not Furnished

No. 615—Clamping Surface  $1\frac{7}{16}$ " deep,  $1\frac{1}{2}$ " wide. Weight 2 lbs.  
Available with either Wheel or Crank Handle.

**STEEL SPINDLE HAND SCREWS****"Tested"**

Number	Length, Jaws	Opening Inches	Depth of Jaw to Top Screw Inches	Quantity per Carton	Wt., lbs., per Carton
704	4 in.	2 in.	1 $\frac{7}{8}$ in.	6	3
706	6 in.	3 in.	2 $\frac{3}{4}$ in.	6	6 $\frac{1}{4}$
708	8 in.	4 $\frac{1}{2}$ in.	4 $\frac{1}{8}$ in.	6	12 $\frac{1}{4}$
710	10 in.	6 in.	5 $\frac{1}{4}$ in.	6	15 $\frac{7}{8}$
712	12 in.	8 $\frac{1}{2}$ in.	5 $\frac{3}{4}$ in.	6	25 $\frac{5}{8}$
714	14 in.	10 in.	6 $\frac{3}{8}$ in.	4	21 $\frac{3}{8}$
716	16 in.	12 in.	7 $\frac{1}{8}$ in.	4	29 $\frac{1}{2}$
718	18 in.	14 in.	8 $\frac{7}{8}$ in.	4	33 $\frac{1}{2}$

(Non-adjustable pattern (opening and closing jaws parallel) can be furnished from factory when desired).

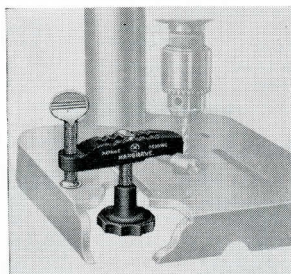
**No. 122**

Saves  
Time

Prevents  
Injuries

Holds  
All Shapes

Difficult Jobs  
Easily Held



**A Drill Press Necessity for  
Homes, Schools and Small Shops**

**T-Bolt Permits Instant Set Up And Removal**

Made of Cast Iron and Steel, affording sturdiness and durability.

Painted finish and plated steel screws prevent rusting.

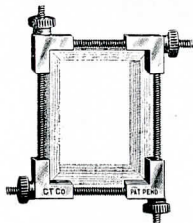
Overall length 5 $\frac{1}{4}$ "

Shipping weight 2 lbs.

Individually boxed

## No. 780 FOUR CORNER MITER-FRAME CLAMP

This HARGRAVE FOUR CORNER MITER CLAMP does the job right. It clamps all four corners at one time and does not mar the work. Can be used on finished stock. Exceedingly flexible as to capacity. Quickly adjusted to any square or rectangle beyond the 2-in. minimum (see No. 780-E Extension Screws below). Absolutely accurate and holds firmly until released. No slipping.



Corner Blocks are Aluminum Alloy, light but strong. Screws are made from a good grade of steel, 1/4-in. dia. Adjusting Nuts are steel, they can be quickly twirled to position and are shaped to give a good grip for tightening. A fine attractive looking tool at low cost.

### No. 780-E EXTENSION SCREWS WITH COUPLINGS



Each set (4) increases capacity of No. 780 Miter Frame Clamp another 12 in. Any number of Extensions may be used for square or rectangle clamping. Hexagon Coupling, securely fastened to screw, assures quick, non-slip tightening or loosening.

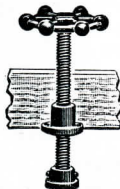
Number	Capacity	Screw Diameter	Quantity per Box	Wt., lbs. per Box
780	2 in. to 14 in.	1/4 in.	1	1 1/8
780-E	12 in. Each	1/4 in.	1 set	3/4

## PRESS SCREWS

No. 36-T



No. 36-W



STEEL SCREW, 9/16-inch diameter, with 6-inch travel, "USS" thread. TIP 1 1/4-inch diameter. Threaded nut drives into 1-inch hole and is held firmly by two screws. (Special longer travel screw can be furnished if desired.)

Wt., lbs., Ea. . . . . 1 1/4

# **PRO-TECTO-HED<sup>®</sup> CHISELS and PUNCHES** **FOR GREATER SAFETY - FOR LONGER LIFE**

"Individually Tested"

Patented

All HARGRAVE Chisels and Punches are Trip-Hammer Forged from Special Analysis Alloy Steel.

EACH Chisel and Punch is tested for Hardness and Toughness before going into stock, assuring satisfactory service. The design affords better proportion and balance than ordinary tools; also defeats "mushrooming" and chipping of head.

HARGRAVE Chisels and Punches are finished with Lustrous Dark Blue Lacquered Body and Polished Blades.

## **No. 200 COLD CHISELS**



Size	Quantity per Box	Wt., lbs., per Box
1/4 in. x 5 in.	12	1
3/8 in. x 5 in.	12	1
3/8 in. x 5 in.	12	1 1/2
1/2 in. x 6 in.	6	1 3/8
5/8 in. x 6 1/2 in.	6	2 1/4
3/4 in. x 7 1/2 in.	6	4 1/8
7/8 in. x 8 in.	6	6 1/4
1 in. x 8 1/2 in.	6	8 5/8

## **No. 205 EXTRA LONG COLD CHISELS**



Size	Quantity Per Box	Wt., lbs.,	Size	Wt., lbs., Each
1/2 in. x 10 in.	6	2 7/8 Box	1 1/4 in. x 18 in.	4 7/8
1/2 in. x 12 in.	6	3 3/8 "	3/4 in. x 24 in.	2 1/4
5/8 in. x 12 in.	6	4 3/8 "	7/8 in. x 24 in.	3 1/2
3/4 in. x 12 in.	6	6 3/4 "	1 in. x 24 in.	4 3/8
7/8 in. x 12 in.	6	9 5/8 "	1 1/4 in. x 24 in.	6 1/2
1 in. x 12 in.	6	12 7/8 "	1 1/2 in. x 24 in.	9
3/4 in. x 18 in.	Bulk	1 3/4 ea.	1 1/4 in. x 36 in.	9 7/8
7/8 in. x 18 in.	Bulk	2 5/8 "	1 1/2 in. x 36 in.	13 1/2
1 in. x 18 in.	Bulk	3 1/4 "		



**PRO-TECTO-HED® CHISELS and PUNCHES****No. 243 — DIAMOND POINT****Cape, Half-Round and Diamond Point Chisels**

Cutting Edge	Size Stock	Length	Quantity per Box	Wt., lbs., per Box
1/8 in.	5/16 in.	4 1/2 in.	12	1
3/16 in.	3/8 in.	5 in.	12	1 3/4
1/4 in.	1/2 in.	6 1/2 in.	6	1 7/8
5/16 in.	5/8 in.	7 in.	6	3 1/4
3/8 in.	5/8 in.	7 1/2 in.	6	3 1/2
1/2 in.	3/4 in.	8 in.	6	6
5/8 in.	3/4 in.	8 in.	6	6 1/2
3/4 in.	7/8 in.	8 1/2 in.	6	8 1/2
7/8 in.	1 in.	9 in.	6	12

**No. 963 — PLUGGING CHISELS**

Cutting Edge	Size Stock	Length	Boxed	Wt., lbs., per Box
3/16 in.	1/2 in.	10 in.	6	3
1/4 in.	5/8 in.	10 in.	6	4 1/2

**No. 950 — FLOOR CHISELS**

Width Blade	Size Stock	Length	Boxed	Wt., lbs., per Box
2 1/2 in.	5/8 in.	11 in.	6	7
3 in.	5/8 in.	12 in.	6	8

**No. 263 — SOLID OR STARTING PUNCH**

Point.....	1/16	1/8	5/32	3/16	1/4	5/16	3/8	1/2
Size Stock.....	3/8	1/2	1/2	1/2	1/2	1/2	5/8	5/8
Length.....	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	5 1/2	6 1/2	6 1/2

No. 223 CAPE



No. 233 HALF-ROUND



## PIN PUNCHES

**No. 2864 — 4 inches overall**

Point.....	1/16	3/32	1/8	5/32	3/16	7/32	1/4	5/16	3/8
Size Stock.....	5/16	5/16	5/16	5/16	5/16	3/8	3/8	7/16	1/2
Pin Length.....	1/2	11/16	3/4	13/16	15/16	1	1	1	1

**No. 2866 — 6 inches overall**

Point.....	3/32	1/8	5/32	3/16	7/32	1/4
Size Stock.....	3/8	3/8	3/8	3/8	3/8	3/8
Pin Length.....	1 1/8	1 1/8	1 3/4	1 3/4	1 7/8	1 7/8

**No. 2869 — 9 inches overall**

Point.....	1/8	3/16	1/4	5/16	3/8
Size Stock.....	1/2	1/2	1/2	1/2	5/8
Pin Length.....	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2

**No. 630 — DRIFT PUNCHES**

For driving out pins and bushings and lining up bolt and rivet holes.  
Trip-Hammer forged. Point hardened and tempered.

Point.....	3/16	1/4	5/16	3/8
Size Stock.....	5/8	5/8	5/8	3/4
Length.....	10	10	10	10
Taper.....	5 1/4	4 3/4	4 3/4	5

**No. 620 — LINING-UP PUNCHES**

Point.....	1/8	5/32	3/16	1/4	5/16	1/4	1/2
Size Stock.....	3/8	1/2	5/8	5/8	3/4	3/4	7/8
Length.....	9	10	12	12	12	18	18
Taper.....	5	6 1/2	8 1/2	8 1/2	8 1/2	9 1/2	12

**No. 284 — CENTER PUNCHES**

Size Stock.....	1/4	5/16	3/8	1/2	5/8
Point.....	5/8	3/2	1/8	3/2	3/8
Length.....	3 1/2	3 3/4	4 1/2	5 1/2	6 1/2

**No. 2873 — PRICK PUNCHES**

Size Stock.....	1/4	3/8	1/2
Length.....	4	5	6

## No. 800 — HAND STAR DRILLS



Forged from Special Analysis Alloy Steel.

$\frac{1}{4}$ in. x 8 in.	$\frac{1}{4}$ in. x 12 in.	$\frac{1}{2}$ in. x 18 in.	$\frac{3}{4}$ in. x 24 in.
$\frac{5}{16}$ in. x 8 in.	$\frac{5}{16}$ in. x 12 in.	$\frac{5}{8}$ in. x 18 in.	$\frac{7}{8}$ in. x 24 in.
$\frac{3}{8}$ in. x 8 in.	$\frac{3}{8}$ in. x 12 in.	$\frac{3}{4}$ in. x 18 in.	1 in. x 24 in.
$\frac{7}{16}$ in. x 8 in.	$\frac{7}{16}$ in. x 12 in.	$\frac{7}{8}$ in. x 18 in.	$1\frac{1}{4}$ in. x 24 in.
$\frac{1}{2}$ in. x 8 in.	$\frac{1}{2}$ in. x 12 in.	1 in. x 18 in.	$1\frac{1}{2}$ in. x 24 in.
$\frac{5}{8}$ in. x 8 in.	$\frac{9}{16}$ in. x 12 in.	$1\frac{1}{8}$ in. x 18 in.	$1\frac{3}{4}$ in. x 24 in.
$\frac{3}{4}$ in. x 8 in.	$\frac{5}{8}$ in. x 12 in.	$1\frac{1}{4}$ in. x 18 in.	.....
.....	$1\frac{1}{16}$ in. x 12 in.	$1\frac{3}{8}$ in. x 18 in.	.....
.....	$\frac{3}{4}$ in. x 12 in.	$1\frac{1}{2}$ in. x 18 in.	.....
.....	$\frac{7}{8}$ in. x 12 in.	$1\frac{3}{4}$ in. x 18 in.	.....
.....	1 in. x 12 in.	.....	.....
.....	$1\frac{1}{8}$ in. x 12 in.	.....	.....
.....	$1\frac{1}{4}$ in. x 12 in.	.....	.....

## No. 120 — HARGRAVE ADAPTER CHUCK FOR ELECTRIC AND PNEUMATIC HAMMERS

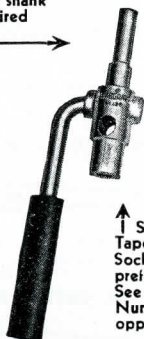
Use of HARGRAVE Adapter Chucks eliminates the necessity of carrying duplicate stocks of Hammer Tools for various hammers.

Specify shank  
required

Made of alloy steel, heat treated; light but strong.

This Chuck or Adapter can be furnished with shank to fit any standard make of Electric or Pneumatic Hammer and with taper tool socket to take HARGRAVE "V-Flat" STAR DRILLS.

The Vibration-proof handle with rubber grip affords ease of operation. No excess weight to absorb hammer blow.



↑ Specify  
Taper Tool  
Socket  
preferred.  
See Taper  
Numbers on  
opposite page

In ordering for Electric Hammers, specify MAKE and SIZE of hammers or give SHANK specifications. Also give our number for TAPER which you wish the tool Socket to take. (See listing of HARGRAVE Taper numbers on opposite page.)

**No. 100****V-FLAT STAR DRILLS FOR ELECTRIC AND PNEUMATIC HAMMERS**

The HARGRAVE "V-Flat" STAR DRILL cuts faster and shows less wear because the construction of the "V-Flat" Point distributes the cutting action more uniformly over the surface being drilled than any other type of Star Drill Point.

It is much more easily sharpened with a file or wheel than the four-point Star Drill.

Trip-Hammer Forged from special analysis steel and properly tempered. Individually TESTED for HARDNESS and TOUGHNESS before going into stock, insuring satisfactory service.

Furnished in the following sizes to fit HARGRAVE Chuck Adapters, also chucks for Black & Decker, Syntron and Millers Falls Electric Hammers.

For other makes of hammers it is necessary to use these drills with the HARGRAVE Adapter Chucks—listed on opposite page.

In ordering, specify by number which taper is required on each size of drill.

**Specify Hargrave Taper Number in Ordering**

The following furnished with either No. 5 Hargrave Taper, which corresponds to Black & Decker "A" Taper, or No. 10 Hargrave Taper, which fits Syntron and Millers Falls Chucks:

Size Drill	Length			
$\frac{1}{4}$ in.	5 in.	8 in.	12 in.	.....
$\frac{5}{16}$ in.	5 in.	8 in.	12 in.	.....
$\frac{3}{8}$ in.	5 in.	8 in.	12 in.	.....
$\frac{7}{16}$ in.	5 in.	8 in.	12 in.	.....
$\frac{1}{2}$ in.	5 in.	8 in.	12 in.	18 in.
$\frac{9}{16}$ in.	....	8 in.	12 in.	18 in.
$\frac{5}{8}$ in.	....	8 in.	12 in.	18 in.

The following furnished with either No. 5 or No. 6 Hargrave Taper, which corresponds to Black & Decker "A" or "B" Taper, respectively, or No. 10 and No. 11 Hargrave Tapers, which fit Syntron and Millers Falls Chucks.

$\frac{11}{16}$ in.	....	8 in.	12 in.	18 in.
$\frac{3}{4}$ in.	....	8 in.	12 in.	18 in.

The following furnished with either No. 6 Hargrave Taper, which corresponds to Black & Decker "B" Taper, or No. 11 Hargrave Taper, which fits Syntron and Millers Falls Chucks:

$\frac{7}{8}$ in.	....	8 in.	12 in.	18 in.
1 in.	....	8 in.	12 in.	18 in.
$1\frac{1}{8}$ in.	....	....	12 in.	18 in.




(Patented)

## Multiple Insert Carbide Tipped Rotary Masonry Drills

Multiple Insert Drills for drilling holes  $\frac{1}{4}$ " in diameter and larger. ( $\frac{3}{16}$ " size has one insert.) Penetrate at high rate of speed, leaving a smooth, accurately drilled hole.


**TEMPER HARDENING** . . . unusual process of hardening dust removing shaft assures more drill life and continued dust ejection. Increases dust ejecting flute life over 400%.


**MORE CARBIDE**—Continuous Wrap-Around Dust Ejecting Spiral and Super Bonded Inserts are features that mean lower cost drilling.




**SOLID  
HEAD  
TYPE**

"GET MORE  
HOLES PER DOLLAR"





**CORE  
TYPE**



OVERALL LENGTH

NEW and IMPROVED STARTER POINTS AVAILABLE  
Information on request.

### SOLID HEAD DRILLS (Non-Removable Shanks)

New Stock No.	DIAMETER		No. of Inserts	OVERALL LENGTHS				
	Drill	Shank		3"	12"	18"	24"	36"
3-A	$\frac{3}{16}$ "	—	1	3"	—	—	—	—
4-TD	$\frac{1}{4}$ "	$\frac{1}{4}$ "	3	5"	"	"	"	—
5-TD	$\frac{5}{16}$ "	$\frac{1}{4}$ "	3	"	—	—	—	—
6-TD	$\frac{3}{8}$ "	$\frac{1}{4}$ "	3	"	"	"	"	—
7-TD	$\frac{7}{16}$ "	$\frac{1}{4}$ "	3	"	—	—	—	—
8-TD	$\frac{1}{2}$ "	$\frac{1}{2}$ "	3	8"	"	"	"	"
9-TD	$\frac{9}{16}$ "	$\frac{1}{2}$ "	3	"	—	—	—	—

### CORE TYPE (Non-Removable Shanks)

10-TD	$\frac{5}{8}$ "	$\frac{1}{2}$ "	3	8"	"	"	"	"
11-TD	$\frac{11}{16}$ "	$\frac{1}{2}$ "	3	"	—	—	—	—
12-TD	$\frac{3}{4}$ "	$\frac{1}{2}$ "	4	"	"	"	"	"
13-TD	$\frac{13}{16}$ "	$\frac{1}{2}$ "	4	"	—	—	—	—

**CORE TYPE DRILLS (Removable Shanks)**

New Stock No.	DIAMETER		No. of Inserts	OVERALL LENGTHS				
	Drill	Shank		9 1/2"	12"	18"	24"	36"
14-TD	7/8"	1/2"	4	"	"	"	"	"
15-TD	1 5/16"	1/2"	4	"	"	"	"	"
16-TD	1"	1/2"	5	"	"	"	"	"
17-TD	1 1/16"	1/2"	5	"	"	"	"	"
18-TD	1 1/8"	1/2"	5	"	"	"	"	"
19-TD	1 3/16"	1/2"	5	"	"	"	"	"
20-TD	1 1/4"	1/2"	5	"	"	"	"	"
21-TD	1 5/16"	1/2"	5	"	"	"	"	"
22-TD	1 3/8"	1/2"	6	"	"	"	"	"
23-TD	1 7/16"	1/2"	6	"	"	"	"	"
24-TD	1 1/2"	1/2"	6	"	"	"	"	"
26-TD	1 5/8"	1/2"	8	"	"	"	"	"
28-TD	1 3/4"	1/2"	8	"	"	"	"	"
30-TD	1 7/8"	1/2"	8	"	"	"	"	"
32-TD	2"	3/4"	8	"	"	"	"	"
36-TD	2 1/4"	3/4"	10	"	"	"	"	"
40-TD	2 1/2"	3/4"	10	"	"	"	"	"
44-TD	2 3/4"	3/4"	10	"	"	"	"	"
48-TD	3"	3/4"	12	"	"	"	"	"
52-TD	3 1/4"	3/4"	12	"	"	"	"	"
56-TD	3 1/2"	3/4"	14	"	"	"	"	"
60-TD	3 3/4"	3/4"	14	"	"	"	"	"
64-TD	4"	1"	18	"	"	"	"	"
68-TD	4 1/4"	1"	18	"	"	"	"	"
72-TD	4 1/2"	1"	18	"	"	"	"	"
80-TD	5"	1"	20	"	"	"	"	"
88-TD	5 1/2"	1"	22	"	"	"	"	"
96-TD	6"	1"	24	"	"	"	"	"

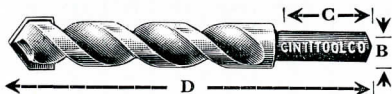
**EXTRA LENGTH SHANKS . . .**

The above listed core drills of 7/8" diameter and larger have removable shanks. These shanks have a specially designed collar for taking thrust and making easy interchange.

**SPECIFICATIONS — EXTRA LENGTH SHANKS**

No.	Diameter	Shank Length	Overall Length	
12-2	1/2"	8 1/2"	12"	No. 2 Morse Tapers Available on Special Order.
18-2	1/2"	14 1/2"	18"	
24-2	1/2"	20 1/2"	24"	
36-2	1/2"	32 1/2"	36"	
12-4	3/4"	7 1/2"	12"	No. 3 Morse Tapers Available on Special Order.
18-4	3/4"	13 1/2"	18"	
24-4	3/4"	19 1/2"	24"	
36-4	3/4"	31 1/2"	36"	
12-1	1"	7"	12"	No. 3 Morse Tapers Available on Special Order.
18-1	1"	13"	18"	
24-1	1"	19"	24"	
36-1	1"	31"	36"	

## IMPROVED DEEP FLUTED DUST EJECTOR ROTARY MASONRY DRILLS



This Carbide  
Tipped Rotary  
Drill assures clean  
round holes in

brick, concrete, slate, marble, porcelain, stone, wallboard, plaster, etc. with minimum noise and effort. Wide Smooth, Round Flutes with proper pitch bring out the dust faster for Continuous, Easier, Cleaner and Deeper drilling.

## SPIRAL FLUTED DRILLS

No.	Nominal Diameter	Shank Dimensions		Overall Drill Length "D"	Quan. per Pkg.	Wt., lbs., per Pkg.
		Diameter "B"	Lengths "C"			
FDM-3	$\frac{3}{16}"$	$\frac{11}{64}"$	....	3"	12	$\frac{3}{8}$
FDM-4	$\frac{1}{4}"$	$\frac{15}{64}"$	....	*4" or 6"	6	$\frac{3}{8}$
FDM-5	$\frac{5}{16}"$	$\frac{1}{4}"$	1 $\frac{1}{4}"$	*4" or 6"	6	$\frac{5}{8}$
FDM-6	$\frac{3}{8}"$	$\frac{1}{4}"$	1 $\frac{1}{4}"$	*4" or 6"	6	1 $\frac{1}{2}$
FDM-7	$\frac{7}{16}"$	$\frac{1}{4}"$	1 $\frac{1}{2}"$	6"	6	1 $\frac{1}{8}$
FDM-8A	$\frac{1}{2}"$	$\frac{1}{4}"$	1 $\frac{1}{2}"$	6"	6	1 $\frac{1}{4}$
FDM-8B	$\frac{1}{2}"$	$\frac{15}{32}"$	....	6"	6	1 $\frac{5}{8}$
FDM-9	$\frac{9}{16}"$	$\frac{1}{2}"$	1 $\frac{1}{2}"$	6"	3	1
FDM-10	$\frac{5}{8}"$	$\frac{1}{2}"$	1 $\frac{1}{2}"$	6"	3	1 $\frac{1}{8}$
FDM-11	1 $\frac{1}{16}"$	$\frac{1}{2}"$	1 $\frac{1}{2}"$	6"	3	1 $\frac{3}{8}$
FDM-12	$\frac{3}{4}"$	$\frac{1}{2}"$	1 $\frac{1}{2}"$	6"	3	1 $\frac{1}{2}$
FDM-14	$\frac{7}{8}"$	$\frac{1}{2}"$	1 $\frac{1}{2}"$	6"	3	2
FDM-16	1"	$\frac{1}{2}"$	1 $\frac{1}{2}"$	6"	3	2 $\frac{3}{8}$

\*4" will be furnished unless 6" specified. Price is same.

## DRILLS WITH EXTRA LENGTH SHANKS

FDM-4L	$\frac{1}{4}"$	$\frac{15}{64}"$	....	12"	6	1 $\frac{5}{8}$
FDM-6L	$\frac{3}{8}"$	$\frac{1}{4}"$	....	12"	6	2 $\frac{3}{4}$
FDM-8L	$\frac{1}{2}"$	$\frac{15}{32}"$	....	12"	6	3 $\frac{3}{4}$
FDM-8LL	$\frac{1}{2}"$	$\frac{15}{32}"$	....	18"	6	5 $\frac{1}{4}$
FDM-10L	$\frac{5}{8}"$	$\frac{1}{2}"$	....	12"	3	2 $\frac{1}{4}$
FDM-10LL	$\frac{5}{8}"$	$\frac{1}{2}"$	....	18"	3	3 $\frac{3}{8}$
FDM-12L	$\frac{3}{4}"$	$\frac{1}{2}"$	....	12"	3	2 $\frac{5}{8}$
FDM-12LL	$\frac{3}{4}"$	$\frac{1}{2}"$	....	18"	3	3 $\frac{1}{2}$
FDM-14L	$\frac{7}{8}"$	$\frac{1}{2}"$	....	12"	3	2 $\frac{7}{8}$

## STRAIGHT FLUTED DRILLS

FDM-18	1 $\frac{1}{8}"$	$\frac{1}{2}"$	1 $\frac{5}{8}"$	6"	1	$\frac{7}{8}$
FDM-20	1 $\frac{1}{4}"$	$\frac{1}{2}"$	1 $\frac{5}{8}"$	10"	1	1 $\frac{3}{4}$
FDM-24	1 $\frac{1}{2}"$	$\frac{1}{2}"$	1 $\frac{5}{8}"$	10"	1	2 $\frac{1}{2}$





No. 414  
Wt., 1 lb. Each



No. 415 Aluminum  
No. 416 Phenolic  
Wt., 3 lbs. Each



No. E-12



No. 407  
Wt., 1 lb. Each



No. 1406  
Wt., 1 lb. Each

Hargrave No. 414 Handy Gasket Cutter, Hand Operated—With Inch & Metric Scales for direct reading. Phenolic body with steel blades. Cuts  $\frac{1}{4}$  to 6" Round Gaskets, Odd Shapes and Straight Pieces any size, from every pliable sheet material. An essential tool for every tool-box, hobby shop, maintenance and production shop.

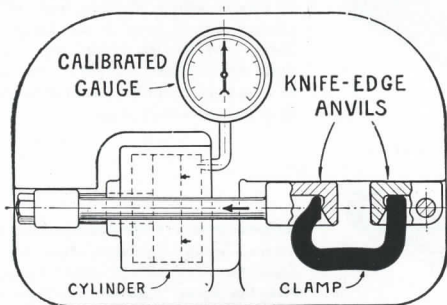
Hargrave Nos. 415 and 416 Extension Gasket Cutters, Hand Operated—Inch & Metric Scales for direct reading. Steel blades. Cut Precision Round Gaskets Any Size from 1" to 13" ( $\frac{1}{4}$ " to  $13\frac{3}{4}$ " with Q-7 Pivot Post) from every pliable sheet material. Extension Arms (No. E-12) increase cutting capacity another 12-inches each, as many as required may be used at one time. A "must" for power plants, refrigeration, electrical, plumbing, production and petroleum industries.

Hargrave No. 407 Washer Cutter—Brace. Capacity  $\frac{7}{8}$ " thru 6". Malleable body, steel pin, tool steel blades. Cuts washers from leather, paper, rubber, sheet lead or thin wood, cutting both inner and outer circle at same time; adaptable to any ordinary brace.

Hargrave No. 1406 Metal Cutter—Brace. Capacity  $1\frac{1}{4}$  thru 6". Malleable body, forged tool steel shank and knives. Cuts circular holes in sheet metal, wood fibre, etc. Adaptable to any ordinary brace. Furnished with round or taper shanks for use in machine if desired.

# HARGRAVE

## INDIVIDUALLY POWER TESTED CLAMPS



Each Hargrave Standard Clamp, Body Clamp and Superclamp is tested on this Hydraulic Clamp Tester. TEST LOAD for each Clamp is merely the number of pounds load to which each Clamp has been tested to discover any defect. Actually, each Clamp will stand more. TEST LOAD for each Clamp pattern is given in specifications.

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# HARGRAVE

## INDIVIDUALLY TESTED CHISELS and PUNCHES



WE TEST THE CUTTING EDGE

ON A HEAT-TREATED SPRING STEEL BAR

(Hard enough to cut open hearth steel). Each chisel must cut a chip from this bar, and the edge must stand it. Each Punch must stand a similar test for hardness and toughness.

It's easy to make a Chisel or Punch hard, but to make them Hard AND Tough is a problem; therefore, for your protection we give EACH one this test. Only those that are hard and tough enough to pass this test go into stock.